

1. Identify each of the following implicit functions as either circles, ellipses, hyperbolas or parabolas. Identify the location of all the foci when appropriate, and if it is an ellipse find the eccentricity, if it is a hyperbola give equations for the asymptotes and if it is a circle find its centre and radius.
 - (a) $x^2 + 4x - 6y = 0$
 - (b) $x^2 + y^2 - 4x - 2y + 4 = 0$
 - (c) $4x^2 + y^2 - 2y = 0$
 - (d) $-x^2 + 4y^2 - 8y + 20 = 0$
2. Write down an equation for the explicit function describing the following functions
 - (a) A circle with radius 3 and centre at $(-1, 5)$
 - (b) An ellipse with foci at $(2, 0)$ and $(8, 0)$ with semi major axis 10
 - (c) A parabola with a focus at $(0, 4)$ and vertex at $(0, 2)$
 - (d) A hyperbola with foci at $(0, \pm 5)$ and a vertex at $(0, 4)$